

December 7, 1972

Mr. George J. Brandt, Jr.
Watson Leavenworth Kelton & Taggart
100 Park Avenue
New York, NY 10017

Re: PRODUCT AND PROCESS FOR
PUFFING TOBACCO W. Germany
Helf. 582-736 PM 562

Dear George:

I have showed the German Official Action in this case to Mr. J. D. Hind, Dr. E. J. Deszyck, Dr. R. de la Burde and Mr. R. A. Tamol, and the following is a composite of our thoughts on how to respond to the rejection.

First, with regard to showing the increase in filling capacity (bottom of p.2) the data in certain examples may be converted to % increase in bulk volume. The example numbers are as shown in the U.S. Application corresponding, and I presume the same numbers were retained for filing abroad. Increases in volume (from a representative value of 34 cc/10 g for untreated filler) are: Example 8, 550°F treatment, 62%; Example 10, 94%; and Example 11, 91%.

The key to the present invention, it is now known, is the introduction of the agent -- ammonia or reaction product of ammonia/carbon dioxide -- into the cell wall of tobacco followed by a rapid heating to cause expansion to override loss of the agent by outward rediffusion. There is nothing in British 969,144 to suggest that a rapid exposure to steam would result in expansion, nor is the density or bulk volume of the product discussed. Under the conditions disclosed by them the tobacco would already be partially heated during the time of its exposure to ammonia, making for accelerated diffusion of ammonia to accomplish their purpose but also tending to reduce the amount of ammonia taken up by the tobacco and more importantly making the encounter with steam (presumably saturated) a

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relatively low heat transfer situation because of a lowered temperature differential. The product is dried as required and cooled, whereupon it is substantially free of ammonia. In short, nothing suggests the necessity of an abrupt encounter with very hot steam or air when ammonia is present in the tobacco, and the ammonia-free end product is not suitable for expansion by such an encounter (e.g., the expansion step of German Offenlegungsschrift 1,917,552).

The ammonia/carbon dioxide approach is now our preferred embodiment of the invention. The reaction with CO_2 "fixes" the ammonia, i.e., lowers its vapor pressure, and ensures that a high concentration is present at the time of the exposure for expansion, despite delays in handling. Darkening of the tobacco is avoided, and the temperature of decomposition (thus expansion) is sharp so that competition from diffusion is much reduced.

Swiss Patent 136,636 does not suggest the application of the necessary high heat transfer conditions to the treated tobacco. If its teachings were followed, very little NH_3/CO_2 reaction product would be present (not enough to accomplish significant expansion) because the exposure seemingly has been to ammonia not at elevated pressure, and only "some" carbon dioxide is let in. The purpose of admitting CO_2 is apparently simply to get rid of excess NH_3 , and it is implied that the "very volatile" carbamic acid will soon disappear.

No reference is made to the filling power or bulk volume of the product, and there is no mention of expansion nor of conditions which would bring it about. It does not appear obvious that combining the teachings of either of these first two references with those of the Offenlegungsschrift would lead to the process of our invention. In particular, nothing in Swiss 136,636 suggests that the NH_3/CO_2 product will be deposited within the cell walls (or the cells for that matter) to provide a basis for subsequent expansion.

Very truly yours,



G. Esler Inskeep
Assistant Patent Officer

/sb

cc: P. Eichorn
W. Gannon
W. Lloyd
F. Resnik
R. Thomson

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